Activity-Based Costing

Appendix C

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Fundamental Accounting Principles

25th Edition

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Appendix C Learning Objectives

PROCEDURAL

P1 Allocate overhead costs using the plantwide overhead rate method.

P2 Allocate overhead costs using activity-based costing.

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Learning Objective P1

Allocate overhead costs using the plantwide overhead rate method.

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Plantwide Overhead Rate Method

- Plantwide overhead rate method uses one overhead rate to allocate overhead costs to products.
- Cost object is the unit of product.
- Allocation base: direct labor hours or machine hours.
- Total budgeted overhead costs / allocation base.
- Same rate used to assign overhead costs to all products.

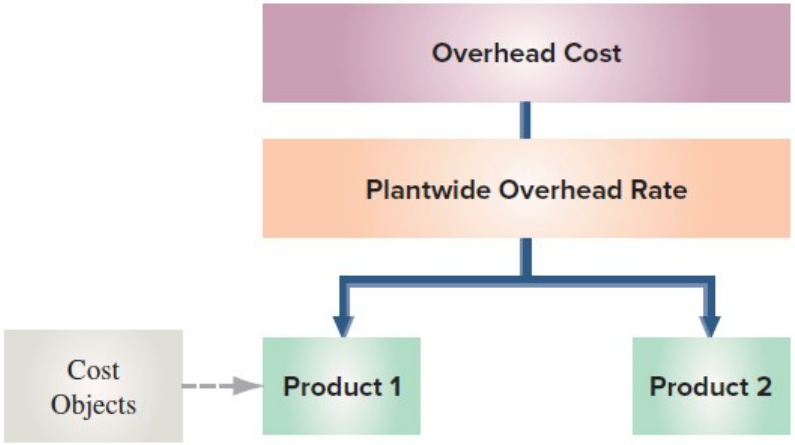

Exhibit C.1

Learning Objective P1: Allocate overhead costs using the plantwide overhead rate method.

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Applying Plantwide Overhead Rate Method[1]

- Total budgeted overhead costs / allocation base.
- $4,800,000 / 100,000 DLH = $48 per direct labor hour (DLH).
- Standard go-kart: 15 DLH/unit × $48 = $ 720 per unit.
- Custom go-kart: 25 DLH/unit × $48 = $1,200 per unit.

	Number of Units	Direct Labor Hours per Unit	Direct Labor Hours
Standard go-kart	5,000	15	75,000
Custom go-kart	1,000	25	25,000
Total			

Exhibit C.2

Allocated Overhead Cost per Unit

Standard go-kart: $48 per DLH × 15 DLH per unit = $ 720 per unit

Custom go-kart: $48 per DLH × 25 DLH per unit = $1,200 per unit

Learning Obj method.

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Applying Plantwide Overhead Rate Method 2

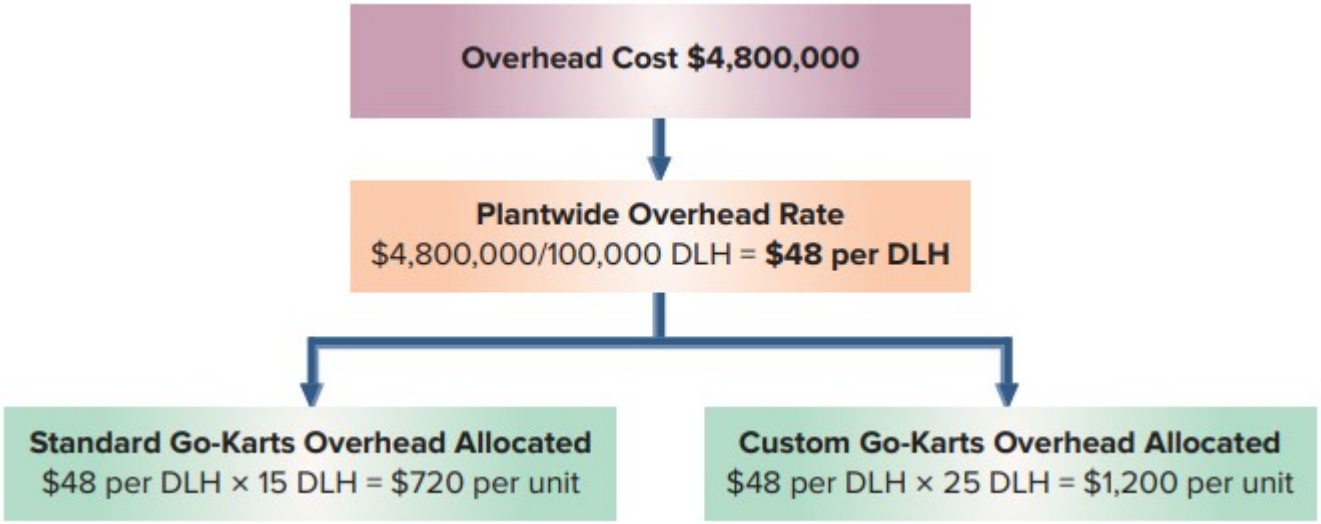
Overhead Cost $4,800,000
Plantwide Overhead Rate
$4,800,000/100,000 DLH = $48 per DLH
Standard Go-Karts Overhead Allocated
$48 per DLH × 15 DLH = $720 per unit
Custom Go-Karts Overhead Allocated
$48 per DLH × 25 DLH = $1,200 per unit

Exhibit C.3

Product Cost per Unit Using the Plantwide Rate Method

	Direct Materials	Direct Labor	Overhead	Product Cost per Unit
Standard go-kart	$400	$350	$720	$1,470
Custom go-kart	600	500	1,200	2,300

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Learning Objective P2

Allocate overhead costs using activity-based costing.

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Cost Flows under Activity-Based Costing

Activity-based costing (ABC) focuses on activities and follows three steps.

1. Identify activities and assign costs to activity cost pools.
2. Compute overhead activity rates.
3. Assign overhead costs to cost objects.

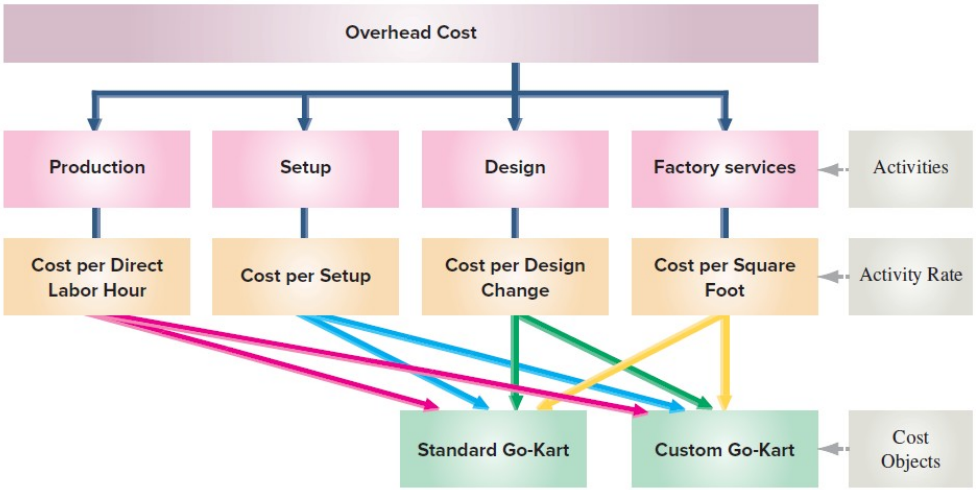

Exhibit C.4

Learning Objective P2: Allocate overhead costs using activity-based costing.

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Applying Activity-Based Costing: Step 1

- Identifies individual activities.
- Activities pooled into groups called cost pools.
- Activity cost pool is a group of costs related to the same activity.
- Activity cost driver is a factor that causes cost of activity to go up or down.

Activity	Budgeted Cost	Activity Cost Driver	Budgeted Activity Usage
Production	$ 600,000	Direct labor hours	100,000 labor hours
Setup	2,000,000	Number of setups	200 setups
Design	1,200,000	Number of design changes	10 changes
Factory services	1,000,000	Square feet	20,000 sq. feet
Total	$4,800,000		

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Applying Activity-Based Costing: Step 2

Step 2 computes an activity rate for each activity cost pool.

Activity rate = budgeted activity cost / budgeted activity usage.

Exhibit C.5

Activity Cost Driver	Activity Usage: Standard Model	Activity Usage: Custom Model	Activity Usage: Total
Direct labor hours	75,000	25,000	100,000
Setups	40	160	200
Design changes	0	10	10

Activity	Budgeted Cost	÷	Budgeted Activity Usage	=	Activity Rate
Production	$ 600,000	÷	100,000 labor hours	=	$6 per direct labor hour
Setup	2,000,000	÷	200 setups	=	$10,000 per setup
Design	1,200,000	÷	10 design changes	=	$120,000 per change
Factory services	1,000,000	÷	20,000 square feet	=	$50 per square foot

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Applying Activity-Based Costing: Step 3

Step 3 allocates overhead costs to products using activity rates and the actual amount of the cost driver used.

Allocated cost = Actual activity usage × Activity rate

Exhibit C.6

	Standard Go-kart					Custom Go-kart				
Activity	Activity Usage	×	Activity Rate	=	Allocated Cost	Activity Usage	×	Activity Rate	=	Allocated Cost
Production	75,000 DLH	×	$6 per DLH	=	$ 450,000	25,000 DLH	×	$6 per DLH	=	$ 150,000
Setup	40 setups	×	$10,000 per setup	=	400,000	160 setups	×	$10,000 per setup	=	1,600,000
Design	0 changes	×	$120,000 per change	=	0	10 changes	×	$120,000 per change	=	1,200,000
Factory services	12,000 sq. ft.	×	$50 per square foot	=	600,000	8,000 sq. ft.	×	$50 per square foot	=	400,000
Total allocated cost					$1,450,000					$3,350,000
Units produced					÷ 5,000					÷ 1,000
Overhead cost per unit					= $290					= $3,350

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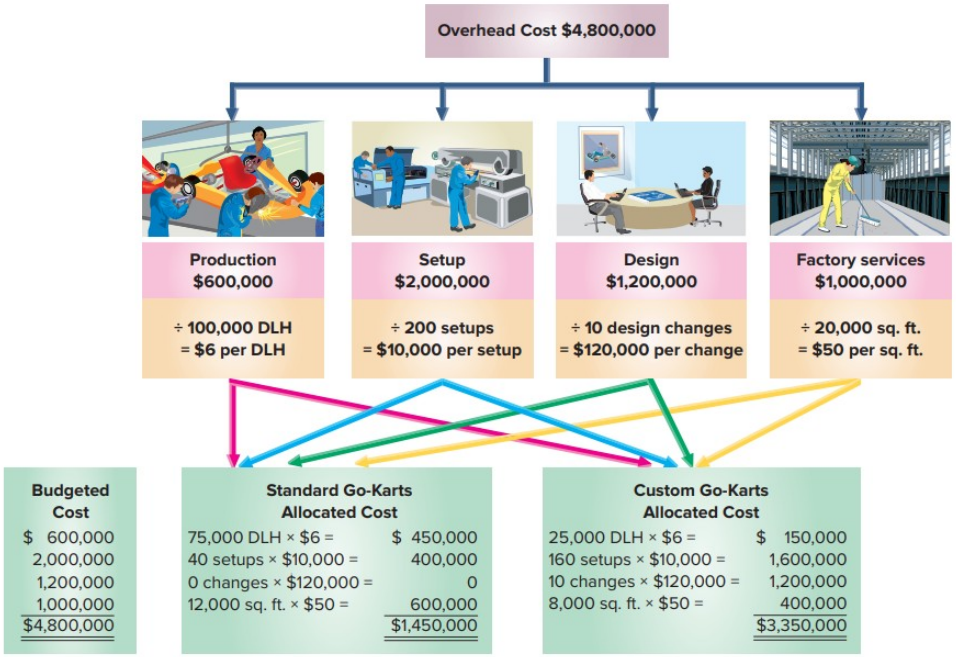
Overhead Allocated to KartCo

Exhibit C.7



	Direct Materials	+ Direct Labor	+ Overhead	= Product Cost per Unit
Standard go-kart	$400	$350	$ 290	$1,040
Custom go-kart	600	500	3,350	4,450

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Comparing ABC with Plantwide Rate

1. Product cost per unit is lower for standard model and higher for custom model under activity-based costing.
2. ABC emphasizes activities and their costs and better reflects how overhead costs are used in making products.
3. Single plantwide rate does not capture products' different uses of these activities and can distort product costs.
4. Low-volume complex products are often undercosted and high-volume simpler products are often overcosted.

Product Cost per Unit	Standard	Custom
Plantwide rate method	$1,470	$2,300
Activity-based costing	1,040	4,450

Learning Objective P2: Allocate overhead costs using activity-based costing.

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End of Appendix C

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